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M O N T H L Y N E W S L E T T?E R

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The following papers, prepared by members of this Bureau, were presented at the A.S.A.E. annual meeting held at Athens, Ga., June 17-20. "The Outlook for Agricultural Engineering Extension", by S.P. Lyle; "Interesting New Trends in Farm Housing Design and Construction," by Wallace Ashby; "Drainage of Peat Lands in Florida," by B.S. Clayton; "The Engineering Reorganization of Farms," by.N.A. Kessler; "Heating Equipment for Farm Homes", by A. H. Senner; "Research Work in Cotton Ginning," by Chas. A. Bennett; and "Recent Developments in the Mechanical Placement of Fertilizer"; by G.A. Cumings. Mr. McCrory and L.A. Jones, R.B. Gray, and R.D. Marsden also attended the meeting.

The early part of the month L. A. Jones made a trip south in connection with the location of CCC drainage camps in Louisiana.

J. G. Sutton has been placed in charge of the drainage maintenance work of the CCC camps in the central States. He will establish a regional office in some location convenient for handling the work. At present he is working out at temporary headquarters at Milwaukee, Wisconsin.

An investigation of utilization of water of the Mojave River, Calif., was begun by P. A. Ewing and Harry F. Blaney, the object being to determine the feasibility of storing surplus waters of this stream, if any, and diverting them to the Santa Ana River basin. Preliminary work included interviews with interested parties in San Bernardino and with farmers in the Mojave River Valley using water from this source. The proposed project would involve a transmountain diversion.

In connection with his assignment as consultant for the New Mexico Emergency Relief Administration, Harry F. Blaney spent ten days in Denver going over the water conservation program for the Colorado Emergency Relief Administration and inspecting a flood control project, with a view to determining whether the methods used in Colorado could be adapted to the program in New Mexico.

A trip to Bonners Ferry, Idaho, was made by L.T. Jessup to make preparations for beginning the season's work on the Kootenai River project. Soil samples were collected and tested for moisture content. A wet-area and partial-crop map was prepared. The experiment station and evapo-transpiration tanks were made ready and observations were begun.

A study of the root habits of various range plants was made by M. R. Lewis on a trip to eastern Oregon. Numerous samples of soil containing the roots from definite volumes were secured and it was planned to determine, so far as time would permit, the weight and length of roots

contained in these samples. This work was done in order to obtain information as to the usual penetration of the winter precipitation in connection with the drought survey and also in connection with the proposed project on the use of water by range vegetation.

An experiment to determine the effect of sweet clover roots upon penetration of irrigation water into the soil is being conducted by R.A. Work at the Medford, Oregon, experiment station. Apparatus consists of two adjacent concrete tanks, each 3.5 by 3.5 feet and 4 feet deep. The soil in the tanks is undisturbed, concrete walls having been poured around the soil in place. At a depth of 3 feet below the ground surface small drains on 8-inch centers are arranged to drain water out of the cores into a central measuring chamber. A suction apparatus has been devised for applying suction to the drains. After initial tests the north core (the less permeable) was seeded to sweet clover and the south core left as a check. Note of percolation of water through the cores is made at periodic intervals. Tests made prior to seeding of one of the tanks indicated that the percolation through a 30-inch column of undisturbed clay soil under a suction force of approximately 1/12 atmosphere amounted to .0038 inch per hour. Further tests will be made after appreciable root development has taken place.

Several large Parshall measuring flumes have recently been constructed on canals diverting water from the Thompson River at Loveland, Colo. Carl Rohwer reports that discharge as indicated by current meter measurements of flow through one of these flumes differed by only one percent from that indicated by the Parshall flume. An 8-foot framed Parshall measuring flume at the east portal of the Twin Lakes Reservoir and Canal Company's trans-mountain diversion tunnel was found to be functioning properly when this tunnel was put into operation, the discharge at first being about 15 second-feet, which was later increased to about 80 second-feet.

An orchard grader or leveler designed by Colin A. Taylor was tested on sandy and on gravelly soil and proved satisfactory. In laying out shallow furrows it has been found necessary in every case to relevel or regrade the land. A second-hand machine for leveling airports was worked over into an orchard model, several modifications being necessary in order to work under the low-hanging branches and for turning in constricted places. The main frame of the grader is 10 feet wide and adjustable wings extend out on each side so that a strip 20 feet wide may be graded. The wings are readily collapsed or folded in for ease in turning. The frame is 20 feet long, this length being essential for proper smoothing of the irregularities between the average orchard tree spacing. In order to reduce friction drag, the front end of the grader is carried with a lifting hitch on the tractor and the rear end is partially supported on a single wheel 24 inches in diameter and with a rim 8 inches wide. The main blade inside the frame is balanced and may be readily adjusted for cutting depth while the machine is in motion. The wings have no vertical adjustment but are set for the desired cut and bolted in position. The draft is moderate and has been handled with rubber-tired tractors.

J. W. Simons has been appointed junior agricultural engineer in the Bureau and reported for duty at Ames, Iowa on June 1. He will take up the work on the Corn Production Machinery Project which has been carried on by L. G. Schoenleber, the latter having been transferred to the Fertilizer Machinery Project at Arlington Farm, Virginia.

After the A.S.A.E. meeting R.B. Gray visited the Auburn and other southern projects, and will return to Washington about July 1.

After the A.S.A.E. meeting at Athens, Ga. Mr. Cumings began inspection of a number of the cooperative fertilizer placement experiments in the Southeastern States.

S.W. McBirney reports that sugar beets in the Sacramento Valley area are looking fine. However, a set of late-planted beet plots, put in the latter part of May to make some further comparisons of hill and drill planting equipment, germinated poorly because of the heat. Temperatures reached 104° and were accompanied by a hot, dry, north wind and relative humidities down to 19 percent.

The spring fertilizer placement work has been completed, the last location being at Marlboro, Maryland. Tobacco was set there June 19 by Messrs. Redit and Humphries.

A wheelbarrow type sprayer was constructed at Toledo for experimental spraying for the control of corn borer. This machine was shipped to New Haven where it will be given field trials by Frank Irons in cooperation with Dr. Batchelder of the Bureau of Entomology and Plant Quarantine.

During the week of June 10 to 15 A.H. Glaves demonstrated self-aligning disk jointers to the International Harvester Co., the John Deere Plow Co., the J. I. Case Co., and the Allis-Chalmers Mfg. Co., at Canton, Ohio, at Moline and Rockford, Ill., and at LaCrosse, Wis.,respectively.

O. K. Hedden reports completion of the barrow sprayer for sweet corn. The finished sprayer was shipped to New Jersey for field trial.

W. M. Hurst assisted by Geo. R. Stafford, in cooperation with the Bureau of Plant Industry, recently ran tests on a grain binder and a modified cotton stripper in harvesting pyrethrum at Bell, Md., Belleville, Pa., and Lititz, Pa. Pyrethrum belongs to the daisy family and from it is extracted an innoxious oil used as a base for spray material and insect powders. Because of difficulty in harvesting the crop, much of it is at present gathered by hand. When bound, as harvested with a binder, the bundles are later threshed by contacting and holding the daisy heads against a threshing cylinder, not allowing passage of the stems through the machine. The importance of even and regular bundles, is obvious. Using special pick-up guard fingers for the binder cutter bar, and running with the platform level, gave very good results in this method of harvest. With upright plants the stripper gathered approximately 95 percent of the daisy heads from the standing stalks. The percentage of stems in the stripped material was also well below that required for satisfactory harvesting. However, in fields where the plants were badly lodged a lower percentage of heads and a higher percentage of stems were gathered.

Additional depth-of-debris-burial studies were made by Thayer Cleaver in a field of cornstalks which were plowed the preceding week. The data secured agree very closely with similar data for other seasons. The disk jointers buried cornstalks approximately three-tenths of an inch deeper than the combination colter-jointers.

While making low-pressure nozzle investigations, E.M.Dieffenbach reports interesting results when using a special whirl plate for directing the spray through the nozzle. Instead of the usual single row of angular holes, he uses two rows, thus cutting down the resistance through the nozzle and increasing the width of the ring of spray delivered.

To properly reduce the forage prior to its entrance into a forage dryer, E. D. Gordon has found that a hammer mill so placed as to receive

the material from the knives of a conventional silage cutter works to advantage. The small increase in power demand is offset by a slightly greater output of dry material, so that there is no appreciable increase in power requirements per ton of dried product. In this connection shredder heads will be tried. The necessity of changing knives frequently has been eliminated also, by this addition.

Wallace Ashby is investigating low-cost housing and other farm housing problems in the South Atlantic States.

No publications were issued during the past month.